Ultrasound-guided Dry Needling Treatment of Myofascial Trigger Points for Piriformis Syndrome Management: A Case Series

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Abstract

Objective: The purpose of this case series was to describe the outcomes of diagnostic ultrasound-assisted dry needling in the management of piriformis syndrome.

Clinical Features: Case 1: a 45-year-old woman reported gluteal pain occasionally radiating in the sciatic region. Her magnetic resonance imaging showing sciatic nerve edema in the underlying portion of the piriformis muscle. Case 2: a 55-year-old man had gluteal pain after deep palpation or being in a prolonged sitting position. A previous magnetic resonance imaging showed a disk herniation at L2-L3. Case 3: a 65-year-old woman reported pain in the sciatic area when she was walking and at nighttime rest. All patients had been treated with oral drugs, with poor results.

Interventions and Outcome: Patients had the same quality and duration of symptoms. The treatments of piriformis muscle and gluteus minimus, medius, and maximus muscles were performed using a convex probe and a 0.30 × 60 mm needle, which was inserted out of plane, maintaining a constant view of its tip. All patients were treated over 10 days and followed up for 6 months. Their symptoms resolved during this time and no adverse reactions were reported.

Conclusion: For these 3 patients with piriformis syndrome who were treated with ultrasound-guided dry-needling treatment, their symptoms resolved and their quality of life improved. (J Chiropr Med 2018;17:198-200)

Key Indexing Terms: *Chronic Pain; Pain; Trigger Points; Therapeutics*

Introduction

Piriformis syndrome (PS) is a neuromuscular disease characterized by gluteal pain that may be exacerbated by compression and deep palpation. Patients frequently report numbness in the posterior and medial region of lower limbs because the sciatic nerve is often compressed or irritated by the piriformis muscle (PM), which lies just above it.[1] Although the incidence of PS is between 0.33% and 6%, it still remains misdiagnosed and often undertreated.[2] Conventional therapies, like oral drugs or local infiltrations, may be contraindicated in some patients and could expose them to complications.[3] In the management of this syndrome, ultrasound (US) guidance is gaining importance, allowing the visualization of specific deep muscle groups and avoiding procedural pain and complications such as puncture of vessels or deep nerve structures.[4] The purpose of this case series was to describe the outcomes of diagnostic US-assisted dry needling in the treatment of trigger points in deep muscle structures in the management of PS.

Case Series

In all 3 patients, symptoms and clinical examinations were highly suggestive for PS. Ultrasound-guided technique

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allowed an accurate needle placement within deep muscle groups and provided an effective response to treatment in patients. Written informed consent for the treatment and data publication was obtained by all 3 patients.

Case 1

A 45-year-old woman reported gluteal pain, occasionally radiating in the sciatic region, that started about 3 years ago. The intensity of pain was evaluated using Numeric Rating Scale (NRS) with a score of 5 to 9. She was receiving treatment of oxycodone and naloxone 20/10 mg twice daily and paracetamol 1 g × 3 per day, with poor benefit. During the first visit, she exhibited a magnetic resonance imaging showing sciatic nerve edema in the underlying portion of the PM. The authors found a possible palpable trigger point in the superficial structures of the gluteus. The procedure was performed using a convex probe (3-5 MHz, SonoSite MICROMAXX M-Turbo) (FUJIFILM SonoSite Europe, Amsterdam, Netherlands). The transducer was placed at level of the greater sciatic foramen and according to the parasacral parallel shift technique, and PM was identified as a triangular hypoechoic structure above the hyperechoic sacral plexus.[5] A 0.30 × 60 mm needle (SEIRIN J-type, Kyoto, Japan) was inserted out of plane, maintaining a constant view of its tip during the procedure. We treated trigger points in PM and gluteus maximus muscle. Subsequently, we treated trigger points of the gluteus minimus and medius muscles, shifting the probe laterally until we reached a good visualization of the structures. The patient was treated over 10 days for 8 sessions; the first improvements were observed from the second treatment, with an NRS score of 3 to 7 in the worst stages. Drug therapy was suspended from the sixth treatment. After the last session, the first patient was asymptomatic at rest and reported tension in the gluteal region only after prolonged walks.

Case 2

A 55-year-old man had sciatic pain for about 3 years (NRS score 5-6). He complained of gluteal pain after deep palpation or prolonged sitting position. A previous magnetic resonance imaging showed a disk hernia at L2-L3 level that did not compress the dural space. The patient took diclofenac 50 mg, in the worst stages. As described for the previous case, the painful areas were identified by palpation. We treated the PM and the gluteus minimus, medius, and maximus muscles using a convex probe (3-5 MHz, SonoSite MICROMAXX M-Turbo) with a 0.30 × 60 mm needle (SEIRIN J-type) inserted out of plane. The patient was treated over 10 days for 12 sessions. Until the third session, he did not have any benefit. The second patient reached a satisfactory NRS score of 1, both for rest and incident pain.

Case 3

A 65-year-old woman had gluteal pain for about 1 year, with an NRS score of 6 raising to 8 in the sitting position. She reported pain in the sciatic area when she was walking and at nighttime rest. She was on treatment with tapentadol 100 mg and paracetamol 500 mg twice daily, taking ibuprofen 600mg in the worst stages. The patient reported intense pain to palpation of the gluteal structures and had numerous trigger points in the muscular structures of the affected leg. We treated the PM and the gluteus with the

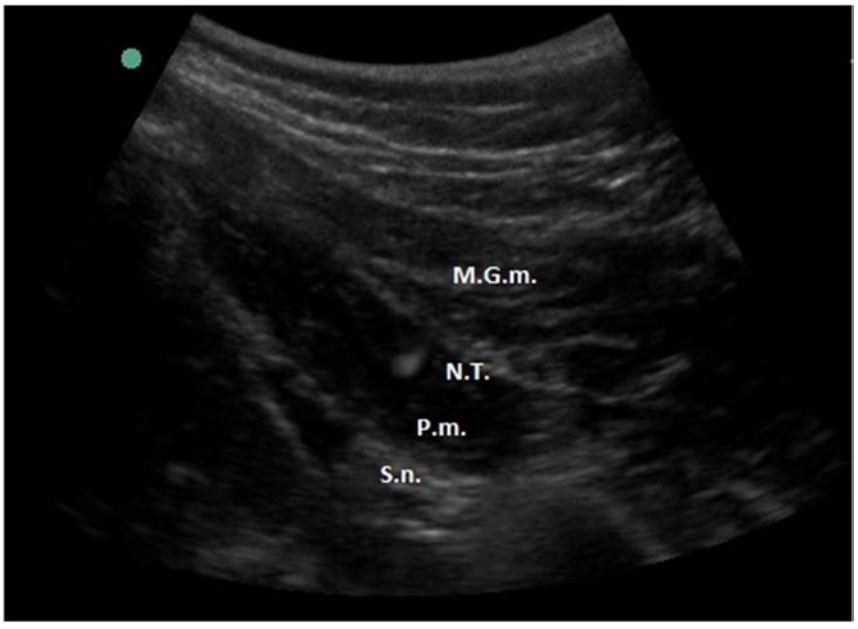

Fig 1. *Ultrasound scanning of treated structures.* MGM*, maximus gluteus muscle;* NT*, tip of the needle;* PM*, piriformis muscle;* SN*, sciatic nerve.*

same precautions described in the previous cases, using a 0.30 × 60 mm needle (SEIRIN J-type). The patient was treated over 10 days for 10 sessions. She reported an NRS score of 4 after 4 sessions, and she was able to reduce tapentadol to 50 mg in 2 doses. The third patient reached a considerable pain relief (NRS score of 1), suspended oral drug therapy, and reported great improvement in her quality of life, especially for the re-established nighttime wellness. All 3 patients were followed up for 6 months and did not present the symptoms again. No adverse events were reported.

Discussion

Ultrasound guidance has the potential to be a viable alternative to conventional technique for needling treatment of myofascial trigger points because it may help with accuracy.[6] Regarding the treatment of PS, we believe the utility of US guidance lies in its potential to ensure an optimal visualization and treatment of the deep muscle structures while avoiding the complications associated to landmark-based technique (Fig 1). Ultrasound-guidance may also allow the detection of twitches evoked by dry needling procedure, which are confirmed by the patient himself, who is instructed about the kind of sensations that he feels during the treatment. In our experience, it was not possible to reproduce the US connotation reported by Kumbhare et al.[4] This is probably due to the depth of the treated structures, the hypoechogenicity of PM, and the small number of patients treated. Larger clinical trials should be performed in the future to confirm the effectiveness and safety of US-guided dry needling treatment of myofascial trigger points in the PS management.

Limitations

The main limit is that this is a case series; thus, our findings are limited. We chose to report the experience in the management of PS in a small, very homogeneous group of patients with the same quality and duration of symptoms. Results for similar treatment with other patients is unknown; thus, larger studies are needed to identify these effects.

Conclusion

Although our case series is too limited to draw conclusions, we believe that US-guided dry needling treatment could be a valid strategy in the management of PS.

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No funding sources or conflicts of interest were reported for this study.

Contributorship Information

Concept development (provided idea for the research): P.F., F.M.
Design (planned the methods to generate the results): S.D.C.
Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): P.F., F.M.
Data collection/processing (responsible for experiments, patient management, organization, or reporting data): S.D.C., G.D.
Analysis/interpretation (responsible for statistical analysis, evaluation, and presentation of the results): P.F.
Literature search (performed the literature search): S.D.C.
Writing (responsible for writing a substantive part of the manuscript): G.D.
Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): P.S., E.P.

Practical Applications

- Ultrasound guidance with dry needling has the potential to be a viable alternative to conventional technique for needling treatment of myofascial trigger points.
- This procedure may help with improved accuracy.
- Larger studies are needed to confirm the findings of this study.

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